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# PEPPER: WHY THE OFFICIAL STANDARDS FOR PERCENTAGE OF NITROGEN IN THE ETHER EXTRACT SHOULD BE MODIFIED OR ABANDONED.

By Charles H. LaWall.

The standards for black pepper as given in Circular No. 19 of the Bureau of Chemistry of the United States Department of Agriculture, provide, among other things, that one hundred parts of the non-volatile ether extract should contain not less than 3.25 parts of nitrogen. Under White Pepper the analogous requirement is "one hundred parts of the non-volatile ether extract contain not less than 4.0 parts of nitrogen."

This requirement, which is intended to be a measure of the piperine in the ether extract, was established through work done and suggestions made by A. L. Winton in 1896,[1] 1897[2] and 1898,[3] at which time Dr. Winton was connected with the Connecticut Agricultural Experiment Station.

According to Dr. Winton's first report upon the subject,[1] he reported a sample of pure black pepper in which the nitrogen in the ether extract was 2.64 per cent. and a sample of a pure white pepper, in which the nitrogen in the ether extract was 3.25 per cent. Subsequent work upon the subject led to the establishment of the present official standards, for the mean of a number of determinations showed a figure of 3.96 per cent. for black pepper and 4.31 per cent, for white pepper in 1897[2] and 3.29 per cent. for black pepper and 4.18 per cent. for white pepper in 1898.[3]

Later work done by Doolittle (Michigan Dairy and Food Commission Bulletin 94) practically bears out Winton's previously suggested standards.

Late in the year 1912 my attention was drawn to the subject by

[1] Bulletin 123, Conn. Agric. Exp. Sta., 1896, p. 32.

[2] 21st Ann. Rep. Conn. Agric. Exp. Sta., 1897, p. 18.

[3] 22nd Ann. Rep. Conn. Agric. Exp. Sta., 1898, p. 1894.

being called upon to make some analyses of white pepper to determine this particular point, the analyst of a firm making large purchases having complained of the fact that the nitrogen in the ether extract was suspiciously low for this substance, being only about 3.25 per cent. Several analyses having verified the fact that low figures were being given by different lots of white pepper, some analyses were made of black pepper with regard to this constant and low results were also obtained, but not proportionately so, only one being below the legal requirement.

As a matter of fact, the requirement is one which is purely arbitrary and possibly subject to seasonal or other natural variation, or to the time of collection of the berry. Analyses made recently of a number of samples of both white and black pepper show ten instances in which the nitrogen percentage ran below the U. S. standard for this factor in white pepper. All other characteristics are normal with the exception of the ash and insoluble ash in No. 1. The black peppers, with one exception, showed a figure for nitrogen content of the ether extract in excess of the minimum requirement.

I have communicated with other analysts who have been examining spices and they report having had similar experiences in some instances. It would seem as though this requirement should either be modified or that some tolerance should be exercised by analysts in the matter of interpretation of results in rejection of samples on non-essential points. As a matter of fact, while piperine does contribute some pungency to both white and black pepper, it is the least valuable of the active constituents present, as all of the aroma and flavor and much of the pungency as well are contributed by the volatile oil and the resinous substances present.

THE ANALYTICAL DATA ON THE FOREGOING SAMPLES ARE HEREWITH GIVEN:

| White pepper samples | Ash per cent. | Ash insol. in HCl | Non-vol. eth. ext. | N in n. v. e. ext. | Crude fibre | Microscopic appearance |
|---|---|---|---|---|---|---|
| 1 | 3.30 | 0.65 | 7.66 | 3.71 | 3.25 | inferior |
| 2 | 1.15 | 0.30 | 8.14 | 3.85 | 2.67 | O.K. |
| 3 | 0.90 | 0.25 | 7.93 | 3.34 | 1.91 | O.K. |
| 4 | 1.28 | 0.18 | 7.63 | 3.60 | 3.53 | O.K. |
| 5 | 1.07 | 0.20 | 7.80 | 3.42 | 1.65 | O.K. |
| 6 | 1.05 | 0.20 | 7.88 | 4.00 | 3.63 | O.K. |
| 7 | 1.08 | 0.13 | 8.02 | 3.21 | 1.80 | O.K. |
| 8 | 1.20 | 0.20 | 7.41 | 3.70 | 3.46 | O.K. |
| 9 | 1.20 | 0.25 | 8.65 | 3.24 | 2.21 | O.K. |
| 10 | 1.24 | 0.41 | 7.72 | 3.62 | 2.53 | O.K. |

# THE PHYSIOLOGICAL ACTIVITY OF ACETIC FLUIDEXTRACT OF DIGITALIS.

By W. A. Pearson.

Recently a lot of Acetic Fluidextract of Digitalis (containing about 15 per cent. of acetic acid) was returned to us with the statement that "it was of unsatisfactory physiological activity." From the records I found that the preparation had been made in 1912 from Digitalis Leaves which I had previously tested and found to be of satisfactory physiological activity.

Five c.c. of the acetic fluidextract was diluted to 50 c.c. with physiological salt solution and various amounts of this dilution injected into eight different guinea pigs with the following results:

Pig No. 1, Weight 350 Gm. Injected.—1.0 c.c. of dilution (0.1 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 2, Weight 268 Gm. Injected.—1.2 c.c. of dilution (0.12 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 3, Weight 285 Gm. Injected.—1.5 c.c. of dilution (0.15 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 4, Weight 290 Gm. Injected.—2.0 c.c. of dilution (0.2 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 5, Weight 350 Gm. Injected.—1.0 c.c. of dilution (0.1 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 6, Weight 268 Gm. Injected.—1.2 c.c. of dilution (0.12 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 7, Weight 285 Gm. Injected.—1.5 c.c. of dilution (0.15 c.c. of acetic fluidextract). Result.—No toxic action noted.

Pig No. 8, Weight 290 Gm. Injected.—2.0 c.c. of dilution (0.2 c.c. of acetic fluidextract). Result.—No toxic action noted.

0.1 c.c. of a Fluidextract of Digitalis, U. S. P. (1.0 c.c. of the 1–10 dilution) should kill a 250 Gm. guinea pig within two hours after the development of typical symptoms of digitalis poisoning. As there was some question if any acetic fluidextract of Digitalis would be of corresponding physiologic activity two fluidextracts were freshly prepared from the same ground digitalis leaves. One fluidextract was made according to the U. S. P. method, the other with acetic acid. Each of these samples was diluted to ten volumes with physiological salt solution and injected into guinea pigs with the following results:

Pig No. 9, Weight 280 Gm. Injected.—1 c.c. of dilution (0.1 c.c. of Acetic Fluidextract). Result.—No toxic action noted.

Pig No. 10, Weight 309 Gm. Injected.—1.5 c.c. of dilution (0.15 c.c. of Acetic Fluidextract). Result.—No toxic action noted.

Pig No. 11, Weight 233 Gm. Injected.—2 c.c. of dilution (0.2 c.c. of Acetic Fluidextract). Result.—No toxic action noted.

Pig No. 12, Weight 275 Gm. Injected.—1 c.c. of dilution (0.1 c.c. of Fluidextract of Digitalis U. S. P.). Result.—Salivation, but pig did not die.

Pig No. 13, Weight 305 Gm. Injected.—1.5 c.c. of dilution (0.15 c.c. of Fluidextract of Digitalis U. S. P. made from leaves from store). Result.—Convulsions, but pig did not die till next morning.

Pig No. 14, Weight 325 Gm. Injected.—2 c.c. of dilution (0.2 c.c. of U. S. P. Fluidextract of Digitalis). Result.—Severe convulsions. Dead in 30 minutes.

It may be readily seen from the results above that the acetic fluidextract of digitalis was markedly inferior in physiological activity to the U. S. P. product made from the same leaves.

In order to determine if the acetic fluidextract had any physiological activity Calcium Carbonate and Magnesium Carbonate was shaken with a portion of the acetic fluidextract and after most of the effervescence had ceased the liquid was filtered. 1 c.c. of this filtrate was now injected into a guinea pig which weighed 320 Gm. No convulsions were noticed. Even salivation, frequent defecation and urination was not observed. The pig died after two days, but post mortem examination did not show heart in firm systole or blood vessels engorged.

Summary and Conclusion.—The physiological activity of acetic fluidextract of Digitalis is undoubtedly markedly less than the fluidextract made by U. S. P. method. In all probability the glucosides are promptly broken down by the acetic acid that is present.

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## THE JUICE OF THE BLUEBERRY AS AN INDICATOR.

By G. N. Watson.

Undoubtedly all have noticed the greenish-blue color that is imparted to the alkaline tongue and lips by the common blueberry (Vaccinium corymbosum) and its varieties. This fact, together with the fact that the juice is turned to a beautiful rose color by

acids suggested that the juice of this berry could be used as an indicator in volumetric analysis.

Employing a few drops of the neutralized juice, I find that the color reaction is very delicate, changing from an olive-green in alkaline solution to the rose color in acid solution. Volumetric solutions, ranging from N/1 to N/50, were tried and the color change was found sensitive to one drop of the latter solution.

The extent of the present investigation seems to indicate that the action is similar to that of Litmus. This is especially true concerning its behavior with carbonates. It is sensitive to carbonic acid and, as in the case of litmus, the solution of carbonate must be boiled.

In common alkaloidal work, the titration of excess N/10 acid by means of N/50 alkali, the new indicator was found to not only equal cochineal in sensitiveness but to have the advantage of a more decided change in color.

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## THE RATIONAL USE OF DISINFECTANTS AND ALGICIDES IN MUNICIPAL WATER SUPPLIES.[1]

BY KARL F. KELLERMAN, Washington, D. C.

Most cities must secure their water supplies from polluted sources; it is useless to attempt a close imitation of natural processes in purifying this water.

The responsibility for purifying water rests upon the company or municipality which supplies it to the consumers, but there should be authority for preventing unreasonable pollution by one community of the sources of supply of other communities.

Disinfection of a water by chemical agents is desirable as an emergency treatment in case of temporary pollution of a supply; it is desirable as a routine method in case the supply is continuously subjected to dangerous pollution.

Hypochlorite is at present the cheapest as well as the most efficient agent for the disinfection of water.

[1] Abstract of paper presented before Section VIII on Hygiene, at the Eighth International Congress of Applied Chemistry, Washington and New York, September 4–13, 1912, and reprinted from "Wasser und Abwasser," Band 6, 1913.

Copper sulphate should be used as an emergency treatment for eradicating odor-producing algae.

For the convenience of those who wish to superintend personally the treatment of water for removing algal pollutions, I have prepared tables showing the quantity of copper sulphate required to eradicate the more common forms, and also the concentration beyond which copper sulphate may be dangerous for several kinds of fish.

TABLE I SHOWING QUANTITY OF COPPER SULPHATE REQUIRED TO KILL VARIOUS FORMS OF ODOR-PRODUCING ORGANISMS.

Copper sulphate expressed as parts per million (mg/l).

| | | | |
|---|---|---|---|
| Anabaena | 0,09 | Kirchneriella | 5,00—10 |
| Asterionella | 0,10 | Leptomitus | 0,40 |
| Beggiatoa | 5,00 | Microspora | 0,40 |
| Chara | 0,20—5 | Navicula | 0,07 |
| Cladophora | 1,00 | Oscillatoria | 0,10—0,40 |
| Cladothrix | 0,20 | Peridinium | 2,00 |
| Clathrocystis | 0,10 | Scenedesmus | 5,00—10 |
| Coelosphaerium | 0,30 | Spirogyra | 0,05—0,30 |
| Conferva | 0,40—2 | Ulothrix | 0,20 |
| Crenothrix | 0,30 | Uroglena | 0,50 |
| Euglena | 1,00 | Volvox | 0,25 |
| Fragilaria | 0,25 | Zygnema | 0,70 |
| Hydrodictyon | 0,10 | | |

TABLE II SHOWING OCCURRENCE OF TWELVE GENERA OF ALGÆ MOST FREQUENTLY REPORTED AS CAUSING TROUBLE IN RESERVOIRS AND PONDS.

Number of cases.

| | | | |
|---|---|---|---|
| Anabaena | 27 | Conferva | 56 |
| Asterionella | 9 | Crenothrix | 13 |
| Beggiatoa | 20 | Fragilaria | 19 |
| Chara | 26 | Navicula | 21 |
| Cladophora | 17 | Oscillatoria | 49 |
| Clathrocystis | 23 | Spirogyra | 43 |

TABLE III SHOWING SAFE LIMIT FOR TREATING WATER WITH COPPER SULPHATE WHEN CERTAIN FISH ARE PRESENT.

Copper sulphate expressed as parts per million (mg/l).

| | | | |
|---|---|---|---|
| Black Bass (Zander) | 2,10 | Pickerel (Hecht) | 0,40 |
| Carp (Karpfen) | 0,30 | Suckers (Seehase) | 0,30 |
| Catfish | 0,40 | Sunfish (Sonnenfisch) | 1,20 |
| Goldfish (Goldfisch) | 0,50 | Trout (Forelle) | 0,14 |
| Perch (Barsch) | 0,75 | | |

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2. *Moore,* Geo. T., and *Kellerman,* Karl F., A method of destroying or preventing the growth of algæ and certain pathogenic bacteria in water supplies. Bulletin 64, Bureau of Plant Industry, U. S. Department of Agriculture, 1904.

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## METHODS FOR THE ANALYSIS OF CASTILE SOAP.[1]

BY JOSEPH L. MAYER.

Castile Soap is official and the authorities recognize the pharmacopœia as a standard, therefore care should be exercised to buy or sell an article which is true to name and is an olive oil soap.

Aside from the fact that the sale of a substitute subjects the seller to legal prosecution, its use causes the difficulty so frequently encountered in preparing soap liniment.

As many soaps sold as castile are not what they are labelled it is necessary to subject samples to analysis in order to determine whether they are properly made olive oil soaps.

In my own work I have employed the following methods with excellent results:

*Sampling.*—Select a sample which is representative of the whole lot or bar. If in the latter form shavings should be taken from different parts such as the outer and inner surfaces, and after being thoroughly mixed kept in a tightly corked bottle from which samples are taken for analysis.

*Water.*—The method of U. S. P., that is taking .500 gramme of sample, placing in a previously tared beaker containing 1 gramme of sand, adding 10 c.c. alcohol and evaporating to dryness and then drying at 110° C. to constant weight is entirely satisfactory. Care must be exercised in heating to conduct the evaporation on a water bath and to employ a small flame, otherwise the sand will be very forcibly ejected from the beaker and the determination ruined.

The quantity of water allowed by the pharmacopœia—36 per

[1] Read before the Kings County Pharmaceutical Society, May 13, 1913.

cent.—is excessive, and should be very much reduced in the new edition.

*Tests for Animal Fats.*—The pharmocopœia states that if a four per cent. alcoholic solution of soap be allowed to cool it should not gelatinize, indicating the absence of animal fats. The most satisfactory method of carrying out this test is to place the alcohol and soap in an Erlenmeyer flask and heat on a water bath, employing a reflux condenser to prevent evaporation. When solution is complete the material is allowed to cool to room temperature (not below 20° C.).

This test is not very satisfactory as the pharmacopœia allows 36 per cent. of water, and as most samples do not contain that much it is easy to see that instead of a 4 per cent. solution one may have almost any strength depending upon the quantity of moisture, the result being that the solution gelatinizes and indicates animal fat where none was used.

Therefore the pharmacopœia should provide tests to determine the origin of the fat employed in making the soap, such as determining the iodine number of the fatty acids and their melting points.

*Separation of the Fatty Acids.*—To a portion of the soap dissolved in water add an excess of diluted sulphuric acid and heat on a water bath until the fatty acids rise to the top a clear layer, then cool in ice water and when the fatty acids are solidified pour off the water. Repeat this heating and cooling process twice, then filter through paper wetted with water; this will retain the fatty acids which after drying are ready for the tests.

*Iodine Number of Fatty Acids.*—Determine iodine number of fatty acids as directed by the pharmacopœia for fats and oils. The writer employs the Hanus method and as suggested by him (*Drug. Circ.*, 1910, page 106) this should be adopted as the official method due to the keeping qualities of the solution and shorter time required to make the determination. Having determined the iodine number of the fatty acid a reference to Allen's organic analysis will indicate the fat or oil which was employed in the preparation of the soap.

*Melting Point of Fatty Acids.*—Take some of the fatty acids prepared as above, gently melt them and immerse the bulb of a thermometer in them; in a few seconds they will have congealed and all that remains is to put the thermometer through a cork in an ounce wide mouth bottle and then suspend the bottle and thermom-

eter in a beaker of water and heat the water slowly. The melting point is regarded as the time when the material forms a clear drop on the tip of the thermometer. Allen's organic analysis gives the melting points of various fatty acids.

*Tests for Silica and other Insoluble Matter.*—The pharmacopœia determines these by dissolving 20 grammes of soap in hot alcohol, washing with hot alcohol, then with hot water and weighing the insoluble as silica. A better plan is to take 5 grammes of soap, dissolve in about 150 c.c. hot water and collect the insoluble on a tared ashless filter paper and after washing with hot water drying at 105° C. and weighing. The increase in weight of the filter paper indicates the insoluble. After igniting this the residue represents insoluble mineral matter.

*Sodium Carbonate.*—The pharmacopœia dissolves 20 grammes of soap in hot alcohol and pours on a tared filter paper; the increase in weight of the paper after washing with hot alcohol is regarded as sodium carbonate, silica, etc.; after pouring water on this the residue is silica and other insoluble matter; the difference between the two being regarded as Sodium Carbonate.

*Free Alkali.*—If upon adding a few drops of alcoholic solution of phenolphtalein to the freshly cut surface of the soap a pink color is not developed the absence of free caustic alkali is indicated.

The pharmacopœial method of determining alkalinity is inexact and indefinite.

The method of determining sodium carbonate as above directed can with slight modification be employed for the quantitative determination of free alkali.

In place of taking 20 grammes take 2 grammes of soap, dissolve in about 150 c.c. of hot neutral alcohol and filter. After washing the filter thoroughly with hot neutral alcohol add phenolphthalein to filtrate and titrate with N/10 $H_2SO_4$. The Alkalinity found is calculated as free alkali due to sodium hydroxide. The material insoluble in alcohol is then dissolved in water and titrated with N/10 $H_2SO_4$, using Methyl orange as indicator. This alkalinity is calculated as free alkali due to sodium carbonate.

If the soap contains both free alkali and free fat the heating with alcohol will influence the result, and for that reason it is often advantageous to follow Devines' method of determining free alkali (*Journal American Chem. Soc.*, 1900, page 693), which is carried out as follows:

Weigh 2 grammes of Soap into a 300 c.c. flask, add 50 c.c. of alcohol, an excess of N/10 stearic acid in alcohol, a few drops of phenolphthalein solution: connect with a reflux condenser and place the whole on a water bath for half an hour. The stearic acid should constantly be in excess, indicated by the solution remaining colorless. The excess of Acid is determined by means of N/10 alcoholic KOH, the difference is the amount required to combine with the total free alkali in the 2 grammes of soap taken.

1 c.c. N/10 Acid is the equivalent of .00397 gramme Caustic Soda or .00526 gramme Sodium Carbonate.

Should it be necessary to determine what quantity of the above is free caustic alkali and what quantity is carbonated, Devine's Method provides that a second determination similar to the first be started, and having calculated the total alkali from the first determination as sodium carbonate add barium chloride to precipitate the alkali, heat a few minutes and after adding phenolphthalein titrate with N/10 stearic acid. This figure represents the c.c. required to neutralize the caustic alkali in the soap and the difference between this and the total alkali will correspond to the carbonate.

*Refractive Index of Fatty Acids.*—The determination of the refractive index of the fatty acid often gives valuable information with reference to the origin of the fat employed in making the soap. This determination is easily made if a refractometer is at hand.

More tests could be applied by the pharmacist to enable him to differentiate genuine and spurious olive oil soaps: The above in addition to being sufficient are simple, accurate and easily performed and should therefore be considered for inclusion in the pharmacopœia.

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## REGISTRATION OF THE PHILADELPHIA COLLEGE OF PHARMACY IN NEW YORK.

By John Uri Lloyd, Phar. M.

"At a meeting of the board of regents of the University of the State of New York held December 12th, last, the registration of the Philadelphia College of Pharmacy was rescinded. . . . As the matter now stands, a graduate of the Philadelphia College of Pharmacy is not recognized under the laws of New York State as a graduate in pharmacy, but must take an additional year at some

'registered' college before he may appear before the board of pharmacy in this State for examination. . . . While the rescinding of the registration of the Philadelphia College of Pharmacy by the New York regents was consummated as long ago as December, the *Circular* has refrained from saying anything about it, until it could go into the matter thoroughly, and it believes that the article given in its new columns this month will be really news to a large majority of, if not practically all, its readers. That it will be read with a variety of emotions by druggists throughout the country, we cannot doubt; for even if no one else were affected, the thousands of graduates of the Philadelphia college scattered throughout the country—teachers, board members, heads of large manufacturing and wholesale establishments, physicians, leading druggists and citizens, authors and editors—will learn of the situation in which their alma mater finds herself, with sorrow, resentment, misgivings or otherwise, as the matter chances to strike them. Some there will be—indeed we happen to know that some there are—who will long for a return to the good old days of the college when entrance requirements, while perhaps not so high as at present, were really what they seemed, when the diploma was a true label for the graduate, when thoroughness was paramount, and when theatrical show was taboo."—*Druggists' Circular* Editorial, April, 1913.

The decision of the board of regents of New York, as outlined in the above fragment of an editorial in the long-established *Druggists' Circular* of New York City, together with the detailed article on the subject in the same number of the *Circular,* will strike the majority of the pharmacists of America a stunning blow. Whilst the different Boards of Pharmacy and Medicine have been suppressing many institutions, more or less prominent, regardless of their professional affiliations or ideals, and as a rule, basing their action upon what in the opinion of many, was mere "theatrical show in education" as a standard of excellence, those concerned in the greater institutions have seemingly felt little interest in the matter. As a parallel to this, one may well turn to Æsop, and read the fable of the blacksmith and the lion. Note how the lion submitted to the paring of his claws and the extraction of his teeth, one by one, and then see, in the end, how the great beast, rendered harmless and defenseless, was treated by his adroit antagonist.

Men there are who will say that the examining boards of the dif-

ferent states are not antagonistic to the development of pharmacy, or to the advancement of medicine. There are other men, however, who believe that the ultimate aim of it all is class legislation, that will permit entrance into professional life, only to the sons of the rich, and that will forever prohibit any opportunity, in a professional direction, to less fortunate people.

Let us consider some of the conditions, as exemplified in the text that heads this article, and as described in the extracts from the editorial in the *Druggists' Circular*. The Philadelphia College of Pharmacy is among the very first, if not the first, of the pharmacy educational institutions in America. Since 1825 its journal, the AMERICAN JOURNAL OF PHARMACY, has been ably edited by men irreproachably qualified in pharmacy, chemistry, botany and allied sciences. Under such auspices the college has been a record breaker as an educator of American pharmacists. Indeed, we would challenge any man to find a location in America not graced, and well graced, with a graduate of this college. From this institution have gone, in liberal numbers, teachers for all other pharmacy colleges, and we question if there be in all America a college of pharmacy that has not in its faculty at least one who has not taken his diploma from the Philadelphia College of Pharmacy. Its faculty has ever been the very bone and sinew of the American Pharmaceutical Association. To merely mention her graduates who have reached prominence in the pharmaceutical business and educational world, would be to fill this page with a list of names. The authors of the great United States Dispensatory, from its very beginning, have been professors in the Philadelphia College of Pharmacy, and when that admirable work, the National Dispensatory, appeared, the pharmacy, chemistry and botanical portions were from the pen of that wheelhorse of American pharmacy, John M. Maisch. The first conspicuous work on pharmacy published in this country, over half a century ago, was written by Professor Parrish, almost the founder of the Philadelphia College of Pharmacy, while the works of Professor Sadtler, the author-chemist, show him to have been one of the most renowned of the profession. From the days of these great men, to the present time, the illustrious record of the Philadelphia College of Pharmacy has been conspicuous, the latest publications being the prodigious work of Professor Joseph P. Remington, the present Chairman of the Revision Committee of the Pharmacopœia

of the United States, and the recently revised "Text Book of Botany and Pharmacognosy," by Professor Henry Kraemer, the most complete and authoritative work known to us on this subject.

The classes of the Philadelphia College of Pharmacy have ever been kept filled by reason of the unquestioned capacity of the Faculty. As the graduates passed from state to state, and have been distributed in every section of our country, they have maintained, to this very day, their positions equally with the graduates of any other teaching institution in the land. Now comes the irony of fate. With the marvellous history that we have thus briefly and very incompletely sketched, extending over nearly a century to the present time, with its work of the present year and that planned for the next, with an unimpeachable equipment for teaching, and a building in which every department is modern and up to date, this great institution now stands publicly discredited in one of our states, as explained in the editorial of the *Druggists' Circular*.

The cause for this untoward state of affairs seems to lie simply in a difference of opinion between the officers of the Philadelphia College of Pharmacy and the New York Board of Regents, as to just what constitutes the necessary *entrance requirements* that give to an institution the best opportunity of serving a young man who comes to her doors, and through him the people, in the direction of pharmacy. In this process of reasoning, others as well as the Philadelphia College of Pharmacy, believe that the *end* reaction is more important than are the preliminary details.

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## WHAT THE ATMOSPHERE IS MADE OF.[1]

### SIR WILLIAM RAMSAY IN LOWELL INSTITUTE LECTURES GIVES INTIMATE HISTORY OF THE DISCOVERY OF THE GASEOUS COMPONENTS OF AIR.

By John Ritchie, Jr.

If the Lowell Institute lectures on the gases of the atmosphere, by Sir William Ramsay, had done nothing more than show to the American public the simple and sterling character of the man and the extraordinary wealth of resource in expedient at his command, they would have been well worth the giving. But they did much more, for besides the academic story of discoveries that have made

[1]Reprinted from *Science Conspectus*, Vol. iii, (1912), pp. 14–18.

their mark upon the chemical world, there was the constant running fire of comment by one intimate with every detail in the long and complicated processes. How interesting, for example, in the naming of neon, to learn that it was the young son of Sir William, home on a vacation from school, who strolling into the laboratory learned of the discovery of the gas. "And is it truly new?" he queried, and on being assured that it was, he said, "Why not call it Novum?" The Latin terminology was, however, not of the customary order, so the Greek was called into requisition and "Neon" it became.

The lecturer took to his country most of the credit for discoveries with reference to the atmosphere, noting that Britain is proverbially ruler of the seas; that she, in the opinion of many is acquiring too great dominion over the land and in the third element, air, "all but one of the important [chemical] discoveries were made by Englishmen."

In his introductory lecture Sir William gave a short history of the chemistry of air and displayed in it some of his philological lore, telling his hearers that gas and ghost are kindred words, gust being another relative, indicative of the fancied relations between air and the spirit or life. "Gas is a made word," said the lecturer, "and is common to modern languages, while another such manufacture, 'blast' was coined in expression of the life of the stars. But since stars have no life from man's point of view, it has not come into familiar use."

The historical story was a very interesting one, pivoting on the old "phlogiston," which became a catch-all for the explanation of obscure phenomena. Phlogiston was that which substances lost in various processes of burning. The scum of melted lead—now known to be lead oxide—was made by phlogiston and if removed the lead was dephlogisticated. Air might likewise be dephlogisticated, and as this material was added or removed the intricate phenomena resulted.

The four elements of the ancients, fire, water, earth and air, with contrasted qualities, individually and in pairs, persisted till the fifteenth or sixteenth centuries. Earth was cold and dry; air, hot and moist; water, cold and wet, and fire, hot and dry. Boyle in the early sixteen hundreds; Mayow, born during the life of Boyle, but quiet and practically unnoticed and Stephen Hales, worked each diligently as chemists, considering all gases to be air

and having no other notion. Mayow found out that air has "nitro-aëreal particles" and "mephitic," and Hales discovered that a great deal of gas can be derived from small quantities of solids. He distilled many things in his laboratory, including what are modern products; he saw that air is a chaos of elastic and inelastic things, but he failed to catch the import of his discoveries. Thus far everything had been hypothetical, there was no standard used and phlogiston was ready at every turn to account for strange results.

Joseph Black was the first real discoverer; he brought into requisition delicate scales, and came upon the idea of changed chemical condition later developed into "conservation of matter." An experiment with magnesia was repeated by the lecturer in much the same form as worked by Black, in which after decomposition, the magnesia was reconstructed. Black's pupil, Rutherford, born in 1749, took for his thesis the quantities of a cold, fixed air, which was really an investigation into the nature of the residual gases after certain kinds of experiment.

It was Priestley, born in 1733, who discovered oxygen, and he had such confidence in its life-giving qualities that he inhaled it, looking forward to the time when others might avail themselves of the luxury, "which till now has been enjoyed only by two mice and myself." Then came Lavoisier, who first mentions nitrogen under the name it still has with the French, azote, he determining that there are four kinds of air, common air, pure air, which is indeed oxygen, azotic gas and fixed air, which is carbonic acid gas. He had really the mystery of the air within his grasp, and produced hydrogen from water, but in the very last of his many memoirs defended phlogiston.

The general historical story ended with Cavendish, quiet and retiring, almost unknown save in very limited circles, who discovered the composition of water. He maintained the idea of phlogiston although the lecturer showed that he did so from the desire to speak to his contemporaries in current phraseology rather than on account of belief in it. He did question to himself the validity of this curious substance and, had he used the chemical balance in his experiments, would undoubtedly have discarded it altogether. He plainly states that where there is phlogiston there is always water and suggests that it may be the water that is effective. He worked largely for his own pleasure and was not

quick to make public his discoveries. He did accomplish, however, most remarkable things, some of them in other fields. He accumulated facts which were accurate quantitatively; for example, that there is 1–120 of the air that will not combine, a figure that today, one hundred and thirty-five years later, is set at 1–84. He computed the density of the earth, arriving at the figure 5.4 with water for the standard, and more than a century of observation, measurement and computation has changed only the decimal places, the accepted constant being now 5.5777.

The work that this man did was wonderful whether taken in quantity or quality. He worked a great deal with the air, he analyzed it for sixty days and in many places, he showed its constant composition and really paved the way for the discovery of argon. One series of experiments was made to find out when a quantity of air was diminished by phlogistication, where the missing air went to.

How argon came to be discovered was one of the most charming of the series of lectures, for here Sir William Ramsay spoke of his relations with Lord Rayleigh and drew a pen picture of this distinguished and broad minded investigator, whose experiments in determining the relative weights of oxygen and hydrogen led first to publications from 1882 till 1893, the last year seeing a comparison between oxygen and nitrogen; next to the request to the members of the Royal Academy for suggestions, and last, to a meeting with Ramsay. Rayleigh had been working out the comparative densities of the gases and to check his observations he made use of gas produced in a number of different ways. He had oxygen from three different sources and found an agreement in the weights between them, but nitrogen when derived from ammonia he found to be lighter than when taken from the atmosphere.

At this juncture Ramsay suggested to Lord Rayleigh that the repetition of some of Cavendish's old experiments might give a clue to the mystery, and Rayleigh said, "Try it out yourself." The experiments, which were repeated on the platform, developed a method of consuming the nitrogen from ordinary air. The oxygen was first removed, then any traces of water and then again a trap was laid for any remaining oxygen. The nitrogen that was left was forced through chips of magnesium and was more or less consumed. At first there was a simple device for returning the nitrogen again and again to the magnesium and later automatic

methods were devised which would effect this end till it was consumed. Means of testing were always possible and the speaker showed how in the successive devices there were improvements. It was evident after a while that there was an unconsumed residue, and this was argon.

Incidentally the lecturer told that he had taken magnesium for the selective material from the fact that in the old experiment when it was burned in a close crucible there was the odor of ammonia showing combination with the nitrogen of the air. In the later experiments, a mixture of lime and magnesium has been substituted for the magnesium chips. He noted that when the experiments were under way the announcement of the offering of the prize from the Hodgkins fund in the possession of the Smithsonian Institution was made. He spoke of this to Lord Rayleigh, suggesting to him to try for it, but the latter would do nothing by himself and made Ramsay take common cause with him.

In August, 1894, the announcement of the discovery of the new gas was made to the British Association. Sir Oliver Lodge was present and said, "These young men have discovered something that is new; have they also discovered its name?" A name was therefore sought, and since the gas was inert, the text, "Why stand ye here all the day idle?" was suggested. Argon is the neuter of the Greek word, idle, in this phrase.

The argon story of Sir William Ramsay, quietly and modestly told, was a key to the supreme scientific character of this leader in chemistry, for it showed his resources as well as his patient care and industry in trying thousands of experiments and one could see the acute inventive mind working all the time to evolve new processes or simplify and perfect those already known.

One fact that puzzled the discoverers of argon was the fact that its spectrum was subject to variations, and these were so curious that it was suggested that here might be a triad of gases and the names, Anglium, Scotium and Hibernium were even suggested for them. But the investigators worked on trying for results instead of anticipating them by processes of guessing. How to get more argon, how best to produce it and with what substance would it combine were the lines of research. First of all, typical animal and vegetable sources were tested to see, of course, whether some substance richer in argon than the atmosphere could be found. Mineral waters were also tried and it was finally concluded that

argon is a component not of the atmosphere alone but is contained in various earthy products.

With reference to the combination of argon with other substances, the possible range was carefully tried out. The speaker named a score of active agents to which it was inert, the line was passed where gold is no longer resistant to change and then the limit for platinum. Argon was not affected by electric sparking nor by fluorine, which is of great activity in making combinations. Then the fierce energy of the electric arc was tried and at the other end of the thermal scale, liquid air. From all of these tests argon emerged unchanged and undiminished and the distinguished lecturer said, in concluding this part of his series of topics, "It may be possible to make a combination with argon, but in the light of knowledge to-day it is difficult to see how it can be done." The making of argon was one of the experiments of the evening of this lecture.

The story of helium was begun by Sir William at a number of different points. First there was related an outline of what was done by Doctor Hillebrand of the United States Geological Survey, who in heating some of the compounds of uranium—a rare element—found a gas whose spectrum was unknown to him. Janssen, the great French astronomer, during the solar eclipse in India, obtained with the comparatively new spectroscope a spectrum having a bright yellow line. The great English spectroscopists tried to place this and finally the world came to the realization that it was a new gas and it was named helium. Sir William Ramsay secured from Doctor Hillebrand some specimens of his mineral, cleveite, for experiment and soon saw that the spectrum was not that of sodium which also has a bright yellow line. Taking it to Sir William Crookes, who was better fitted out with spectroscopic apparatus, the latter viewed the spectrum and pronounced it to be that of helium, then first identified from earthy materials. The next thing, of course, was to find out by what it could be produced in larger quantities. "The proverbial needle in the haymow was simplicity itself," said the lecturer, "compared with this task," and the outlining of what was done in the research is testimony to the splendid resources of the great Englishman, or rather Scotchman. The British Museum was ransacked for minerals and about two hundred likely samples were taken. These were subjected to tests, but no new spectrum resulted; then the gases of mineral waters

were tried and even the volcanic gases of Iceland, to which country Sir William journeyed on his quest. Meteorites were heated and a great range of such experiments tried, but all without avail. "And all this time," said the lecturer, "it was all about us in the commonest thing we had, the air." This was in 1896 and the means which were to put the great results into the hands of the investigators were just coming into reach of scientific men. This was liquid air, and by way of return for courtesies of the laboratory the first litre of this product made by an Englishman in a new way was sent to Sir William. The relation of this to the discovery was that cocoanut charcoal has an extraordinary appetite for gas and the colder it becomes the more gas it will absorb. Charcoal chilled to the very low figure of the temperature of liquid air does select from mixtures of gases in contact with it all of those then known to be in the air excepting helium. This gas was not absorbed in such processes and the scientists collected it in sufficient quantity for the determination of its various chemical constants.

Gaps in the rhythmic order of qualities as shown by the tabulations of chemical elements furnished the suggestion that there were missing elements and the low temperatures of liquid air and hydrogen furnished a means of separating them from their companions. In a rough way the process may be explained by the different temperatures at which the different gases liquefy or freeze. One gas will become liquid while another is still a gas, or freeze while its companion is a liquid. The gas can be pumped out or the liquid drawn off, while the second gas remains in different condition.

The litre of liquid air that was received by Sir William was used largely for amusement, the scientists literally playing with the strange, new material. When it was nearly all gone, scientific tests were suggested and the familiar treatments were given it. It was found that the residue had a higher weight than the normal one for argon. From this circumstance there came the separation of krypton, so called because it had been hidden.

Of course with the increasing ease with which liquid air could be obtained such experiments were repeated and it was noticed that even with the krypton taken out, there was always a bubble of residue. This was tested in the ways known to chemists; the spectrum showed that it was still a different gas and xenon, the stranger, was produced. It was the separation of the gases by

means of their different vaporizing points that was now used in the discoveries. Xenon proved to be the heaviest gas then known, sixty-six times the weight of hydrogen.

At this time, in 1898, the business of liquefying air assumed relatively great magnitude, and the investigators in London were able to acquire a considerable quantity—fifteen litres—of argon. This was treated in the various ways that had been evolved in previous experiments and from it was produced or rather separated a light gas with red spectrum. This was neon. Still more recently through the ability to get larger quantities of argon, it has been possible to gather as much as 120 cubic centimetres of neon. This has been tested in all the ways known to chemistry of today to determine whether still other gases are in combination with it, but it has resisted separation so that the discussion in this direction seems to be finished.

Although it would seem as if here would be the end of the story of gases in the atmosphere, the final lecture brought out the fact that still another remained, which in due sequence of investigation and discoveries, was found and its characters determined. This was niton, so-called because when frozen it shines. The story was one that took up the investigations in the matter of radio-activity. It is known that electricity may be gathered high in the air and its source was always a mystery. It is now known that it is formed by the decomposition of the gases. The radio-activity story led up to the showing that there is a radium emanation which has certain peculiarities and relationships in a curious group of activities. This is now known to be a gas and a constituent of air. Its presence was suspected at last through a gap in the chemical tabulation of elements. Hydrogen was suspected of being possibly in combination with something; the temperature of the combination was lowered; there was a process of solidification at a temperature at which hydrogen was still unfrozen, the latter was pumped out and the residue examined. Thus the gas niton was found, an unstable one, it would seem, for the members of the radium group of substances are continually parting with atoms or electrons and becoming other members of the group. Helium and electrons are alternates in this loss, which is a phenomenon giving rise to new concepts in chemistry.

# PROGRESS IN PHARMACY.

## A Quarterly Review of Some of the Literature Relating to Pharmacy and Materia Medica.

By John K. Thum, Ph.G., German Hospital, Philadelphia, Pa.

Aconite Alkaloids.—Schulze and Biertung (*Archiv der Pharm.*, 1913, 8) have carried out an exhaustive study of the alkaloids of *Aconitum Lycoctonum*. The two bases of the plant were termed lycaconitine and myoctinine. By hydrolysis of either alkaloid by means of hydrochloric acid a new alkaloid is obtained, to which the name anthranoyl-lycoctonine has been given. The new alkaloid is very fluorescent in either alcoholic or ethereal solution.

Adulterated Gentian.—Tschirch, upon an examination of some samples of powdered gentian, found that they were adulterated with yellow dock and blunt leaved dock, mountain rhubarb, almond shells and barley bran. (*Schweiz. Woch. Chem. Pharm.*)

An Austrian Investigation of Commercial Digitalis Preparations.—In a recent paper Weis of Vienna reviews some of the methods for the physiologic standardization of digitalis. In his investigation of commercial "ready-made" tinctures he used the frog heart method as described by Hale in Hygienic Laboratory Bulletin 74. He found these tinctures to be fifteen times less active than the tinctures made from good leaves in accordance with the directions of the Austrian Pharmacopœia. He also states that the pharmacist would fulfil his obligations to the physician and patient much better if he would prepare tinctures himself instead of dispensing those made by manufacturing houses. (*Jour. A. M. A.*, 1913.)

A New Alkaloid.—Bridel (*Zeit. Allg. Oest. Apoth. Verein*, 1913, 603) has isolated an alkaloid from the rhizome of *Menyanthes trifoliata*, which he terms meliatine. It is lævorotatory, and is soluble in water, alcohol, and acetone. It melts at 223°. Its formula is $C_{45}H_{22}O_9$. (*Chemist and Druggist*, Mar. 15, 1913.)

A New Alkaloid from Pilocarpus.—According to Heger and Rogues if a mixture of all the alkaloids from Pilocarpus microphyllus be changed into nitrates or chlorides, and these recrystallized, the bases remaining in the mother-liquid can be made by fractional precipitation to give a new alkaloid, to which the name *carpilline* has been given. This alkaloid is dextrogyrate, and a weak mono-acid base with the formula $C_{16}H_{18}O_2N_2$.

AN OPIUM GLUCOSIDE.—Glucosides closely resembling alkaloids, which have been termed glyco-alkaloids, are known, such as solanin and achillein. A similar body, although not occurring naturally in opium, can be formed by treating morphine in soda solution with aceto-bromglucose in acetone solution. The resulting glucoside is crystallized from 50 per cent. alcohol, and forms bitter tasting needles of the formula $C_{17}H_{18}NO_3C_6H_{11}O_5H_2O$. (*Chem. and Druggist,* Mar. 15, 1913.)

BACTERIAL VACCINE THERAPY: *Its Indications and Limitations.*—Under the foregoing title a special article is appearing in the *Jour. A. M. A.,* continued from week to week, that is of much interest and could be read with much profit by pharmacists in general.

BELLADONNA CULTIVATION IN CALIFORNIA.—Two crops of leaves were harvested last year; the leaves contained considerable stems, but the percentage of alkaloids present was much higher than official requirements, some being as high as 0.84 per cent., the official minimum being 0.30 per cent. The shipment of belladonna from California was the first in the history of this country. (*Pacific Druggist.*)

"BIG BUSINESS" AND SCIENCE.—Under the foregoing title an editorial in the *Journal of the A. M. A.* has this to say: "Much has been written on how science and commercial industries (especially chemical industries) have been of mutual aid in Germany, and regrets have been expressed that alliances of this nature are not more frequent in the United States. Physicians seeking for impartial accounts of new drugs, however, often have occasion to wish that many of the communications which appear in German medical journals had been written by those less dependent on manufacturers. How little the big German chemical interests hesitate to sacrifice science for the sake of 'business,' moreover, is strikingly illustrated by a remark of Ostwald, a man who has probably done more for both German science and chemical industry than any other one living. Ostwald for many years has been endeavoring to secure the establishment of an international institute of chemistry, one of the functions of which is to be the maintenance of a card index of all the discoveries in chemistry so that an investigator anywhere in the world can have instant access to everything which has been written on a particular subject in which he may be interested. Violent opposition to this scheme, according to Ostwald, has developed on the part of the big chemical houses of Germany,

the reason apparently being that these houses have established such catalogues for their own use, the possession of which gives them great advantages over the smaller houses in cases of patent litigation, etc. Ostwald says, however, that such an institute will be founded 'in Belgium, or in France, or, what is most probable, in America.'

"Will America prove itself worthy of this expression of confidence?" and the editorial goes on to say that it depends altogether on the strength of the scientific as compared to the commercial spirit.

ENLIGHTENED STAND OF A MAIL-ORDER HOUSE.—The *Journal of the American Medical Association* in a recent number comments favorably on the action of a large western mail-order house in discontinuing the sale of "patent medicines." In their new catalogue the company tells its patrons why it no longer lists secret preparations. Explanatory of its attitude in the matter it says in part:

"Many of our customers will be surprised and possibly some of them disappointed to find that this catalogue no longer lists the various patent medicines we have carried in the past. Our decision to discontinue the sale of patent medicines was made after careful study of the question from all sides and is based on our policy of handling only dependable merchandise—merchandise that we believe will give the service our customers have a right to expect. We have come to believe that patent medicines do not conform to this standard; in fact, we are confident that those of our customers who have investigated the matter thoroughly will agree with us that, considered in all its phases, the patent medicine business is a public evil.

"We are not prepared to take the extreme position that no medicines of any kind, regardless of how simple or in what manner advertised, should be offered direct to the public. However, even such a state of things might easily be better than the present situation, in which we find valueless and even dangerous medicines offered to the public through the medium of advertising that is extravagant, misleading and deceptive—advertising calculated to deceive the well into the belief that they are sick and to induce the sick to pin their faith to ineffectual means for recovery."

EUPHORBIA PILULIFERA.—In a communication to the Pharmaceutical Society of Great Britain, Dr. F. B. Power and H. Browning give the result of a complete chemical examination. Among the various constituents of this drug which have now been

isolated and described there is none to which any specific physiological action can be attributed. Such therapeutic virtues as the plant has been presumed to possess would therefore not appear to depend upon any single substance of a definite chemical character.

EPINEPHRIN.—Solutions of epinephrin treated with gold chloride give a decided red color. Gautier says that this reaction is so sensitive that this drug can be detected in extremely attenuated dilutions.

THE PHARMACIST AND THE PATENT MEDICINE.—The foregoing is the title of an editorial in the April number of the *Journal of the A. Ph. A.*, in which Editor Beal, as a tentative proposition, suggests that the A. Ph. A. appoint a Council on Proprietary Medicines. Among other things its function to be that of determining whether there is such a thing as a legitimate proprietary medicine which a pharmacist may conscientiously recommend and sell to the general public. "And whether on the whole the public is benefited or injured by the use of such ready-made medicines."

If this conclusion can be arrived at, then a line of demarcation between legitimate and illegitimate remedies, whether made by the individual druggist, by druggists' co-operative bodies, or otherwise.

That there may be some objection to the organization of such a Council because of the existence and work of the Council on Pharmacy and Chemistry of the A. M. A. he admits, but does not regard it as a valid one. The main reason for the organization of the new council would be to place organized pharmacy on record on this question.

Let us hope that when organized pharmacy does take its final stand on this vital question of public health it shall be on the same high level taken by organized medicine.

PHARMACOPŒIAL MATTERS.—Osborne in *Jour. A. M. A.* for May 10, 1913, just three years from the date of convention, makes a final plea for a useful pharmacopœia. He says in part: "Shall we have the United States Pharmacopœia up-to-date and of scientific and therapeutic value, or shall it be a book of ancient drug lore intermixed with drugs of real value." In an up-to-date book of this age, a drug, in order to gain acceptance, must have therapeutic value, be pure, and the preparations must be of the best.

The chairman of the pharmacopœial revision committee has been quoted as stating that nearly all of the reports of the sub-committees are finished and that the executive committee has already

passed upon 588 articles. Just when the book will be issued from the press the chairman is unable to state.

PROPAGANDA FOR REFORM.—The question of the regulation and sale of nostrums and proprietary medicine has recently been discussed in the Italian Parliament. In the course of the discussion some of the representatives called the attention of the government to the danger to health from the use of proprietaries without the sanction of medical advice. Various methods for controlling the sale of these preparations were suggested. It was also urged that strong effort should be made to awaken the "hygienic conscience" of the public. The United States was mentioned as the first country to awaken the public against the evils and dangers to public health of nostrums and fraudulent labels. (*Jour. A. M. A.*, May 10, 1913.)

PROPOSED PHARMACEUTICAL LEGISLATION.—The Arkansas legislature is considering a bill which prohibits the sale of any patent or proprietary medicine that does not bear on the label a complete schedule of all the ingredients contained therein; it also prohibits the distribution of samples of medicines. This is legislation that is desirable from every view-point. In Missouri an amendment to the state food and drugs act is proposed requiring a statement on the label not only of the drugs named in the federal act, but of "any other drug." Another amendment prohibits the sale of coca, opium and their preparations except on a physician's prescription. Nebraska legislature has a bill before it which forbids false or fraudulent therapeutic claims. Another bill prohibits the sale of patent or proprietary medicines containing poisons unless the poisonous ingredient is declared on the label; another requires the use of English in writing prescriptions and forbids the use of any other language. The New Hampshire legislature also has an elaborate anti-narcotic law under consideration. Kansas is discussing a rather comprehensive bill which remodels the pharmacy act, defines the qualifications for registration, offers a poison schedule and provides that the medicines dispensed by physicians shall be subject to inspection and must also comply with the standards provided. In Iowa a therapeutic amendment to the food and drugs act; also a bill which prohibits the compounding and manufacture of any preparation containing narcotic drugs except by registered pharmacists or assistant registered pharmacist under the supervision of a registered pharmacist; also a bill prohibiting the publication or distribution in any form of fraudulent advertising; Idaho contem-

plates an anti-narcotic law, and prohibits the sale of cocaine, opium or their derivatives or compounds except on the written prescription of a physician. Indiana also has one in view with exceptions permitting the sale of proprietaries containing minimum quantities of narcotics. New Mexico considers a bill which forbids the distribution of harmful and injurious articles. North Carolina legislature has for its consideration one which goes so far as to make it unlawful to prescribe or recommend any secret drugs and that the prescriber must be required to tell the full composition of the preparation to the patient. North Dakota has a bill which prohibits the distribution of samples of preparations containing poisons or any of the drugs named in the federal regulations except upon the special personal request of the householder. Oklahoma has in view a bill which, among other stringent requirements, gives authority to health officials to require medical inspection for all handlers of foods and drugs who are suspected to have contagious, infectious and loathsome disease.

RHAMNUS CATHARTICA.—Exhausted with boiling alcohol a brown substance separates on cooling which on recrystallization forms colorless, microscopic crystals, melting at 83° to 85°. This body has been named rhamnosterin. On further treatment of the alcoholic solution a precipitate was obtained which was extracted with benzol; on cooling, this solution gave a red mass from which frangula emodin and a body with a yellowish fluorescence, and named rhamnofluorin, was isolated. The authors also obtained chrysophanol, chrysophanic acid, *d*-glucose and a tannic-like body. (Tschirch and Bomberger, in *Schweiz. Woch. Chem. Pharm.*)

SANTONIN.—A rather delicate test for this drug is as follows: A small crystal is agitated in a test tube with a few drops of ethyl nitrite, then add a few drops of potassium hydroxide test solution; if santonin is present a deep rose color is produced. The potassium hydroxide produces the color reaction; ethyl nitrite alone does not react with santonin, which distinguishes it from aloin and resorcin, these drugs being colored red by ethyl nitrite. (*Anal. de Chim. Analyt.*)

SUGAR AND ALCOHOL FROM SAWDUST.—British chemists have made the manufacture of sugar from sawdust an established fact. This is chiefly important, because, like all sugars, it may be converted into alcohol. This new process is a modification of the Classen method, which has been known for some time but never

used commercially. It is claimed that 200 tons of sawdust produce 6000 gallons of ethyl alcohol, besides large quantities of acetic acid and wood naphtha. (Grosh, *Druggists' Circular.*)

STROPHANTHINUM.—Strophanthin-Kombé of commerce is amorphous, not crystallized as this substance is described in the U. S. P. The melting point should be omitted, as official strophanthin is a mixture of variable composition. (*Jour. of A. Ph. A.*, April, 1913, page 5.)

SULPHONETHYLMETHANUM.—The melting point should be replaced by a range of 75° to 77°, which limits should be definitely required as a test of purity. In the permanganate test 20 c.c. of the filtrate from the preceding test should be taken and 0.05 c.c. of N/10 potassium permanganate (measured with a 1 c.c. pipette). As the test now stands, it is too vague to be of use. (*Jour. A. Ph. A.*, April, 1913.)

TARIFF REDUCTIONS FOR CHEMICALS.—So far as the revision of the tariff in connection with drugs and chemicals is concerned a glance over Schedule A shows generally a sweeping reduction in present rates.

TERPINI HYDRAS.—The official statement that it is permanent in the air does not agree with practical experience, which shows that it is somewhat efflorescent and often does not contain fully one molecule of crystal water. For this reason a determination of the melting point, as a test for organic impurities, is desirable, and is preferably made after removal of the water by drying the finely powdered substance over $H_2SO_4$ to a constant weight, as the melting point of the hydrate varies with the degree of hydration. Anhydrous terpin hydrate should melt between 102° and 105°.

TEST FOR FORMALDEHYDE.—Denigés (*Comp. rend.* through *Pharm. Zentrh.*) offers this method for detecting formaldehyde: 5 c.c. of suspected solution is mixed with an equal volume of solution of fuchsin disulphite and 1.30 c.c. of $H_2SO_4$ sp. gr. 1.66; if formaldehyde be present a blue color will show. This color reaction manifests itself with as small a quantity as 0.01 milligramme within 5 minutes. This test is applicable to any substance from which formaldehyde is easily separated by sulphuric acid.

TEST FOR NITRITES.—A. C. G. Egerton states that *a*-naphthylamine sulphanilic acid is impracticable for use as a colorimetric reagent, owing to the precipitate formed. He finds that dimethylaniline dissolved in acetic acid gives a coloration with a solution containing 0.005 gramme $N_2O_2$ per c.c., at which concentration, he

states, the presence of nitrites in a water becomes dangerous. (*Chemist and Druggist,* Mar. 1, 1913.)

THE PURITY OF COMMERCIAL SODIUM SALICYLATE.—The results of a chemical investigation of synthetic and natural sodium salicylate seem to warrant the conclusion that the cheapest commercial synthetic sodium salicylate is the equal of the higher-priced brands of the synthetic kind or the costly "natural" product. According to a pharmacologic study by Waddell there is no difference in the physiologic action of the synthetic and "natural" sodium salicylates. (*Jour. A. M. A.,* April 19, 1913.)

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## CORRESPONDENCE.

AMERICAN JOURNAL OF PHARMACY,
Philadelphia, Pa.

*Dear Sirs:*

I am pleased to inform you that the case of Commonwealth of Pennsylvania *vs.* B. T. T. Tobin, which was practically *vs.* Sharp & Dohme, as Mr. Tobin was our Philadelphia Agent and the Pennsylvania State Pharmaceutical Examining Board, which enforces the Pure Food and Drug Act of 1909 of Pennsylvania, could only proceed against a local person and not against a Maryland or other foreign corporation, has on May 1st been decided in favor of Sharp & Dohme and against the said Pharmaceutical Examining Board. The case has been pending since August, 1910, due mainly to delays of one kind or another on the part of the Board as we were quite desirous of having the case tested and settled, since it involved the broad and important question of reading regulations adopted by an executive board into a law passed by a legislative body.

The case was one involving a bottle of Essence of Pepsin 1 : 2000 manufactured by Sharp & Dohme, which Sharp & Dohme have been supplying for the medical profession to the drug trade since 1888 and always of the same consistence, formula and digestive power. According to the Federal Pure Food and Drug Act and the Pennsylvania Pure Food and Drugs Act of 1909, this essence of Pepsin was correctly labelled and could legally be sold in Pennsylvania or any other state, and for the following reasons, to wit: 1. It was an estabished product for which a fixed demand has existed for twenty-three years and it has always given satisfaction. 2. It was correctly labelled, inasmuch as although it was not of the

National Formulary digestive strength of 1:3800, it had plainly stated upon its label its correct and claimed digestive power of 1:2000. 3. It was found by the chemists of the Pharmaceutical Examining Board to be above the digestive strength claimed upon the label and was, hence, found to be a better product even than it was held out to be by Sharp & Dohme.

This Essence of Pepsin case was brought by the Pennsylvania Board to test said Board's right by law to make regulations arbitrarily established by itself part of the organic law of the state. Therefore, this question is one of great importance to the drug trade all over the country, as there exists a growing tendency for Federal and State Boards, whose duty it is merely to execute laws passed by Congress or a State Legislature, to formulate regulations and endeavor to enforce them as part of the organic law respectively of the country or state. The Sharp & Dohme Essence of Pepsin was made the test case, but it has been difficult to get the Pennsylvania Board to bring the case to trial, as the Board evidently felt it had no strong case and that the case was going to be contested by able counsel and competent witnesses. As it involved a broad question of moment to the entire drug trade of the land, Sharp & Dohme had fully intended to take it up to the Court of Appeals, and if possible to the U. S. Supreme Court, in the event that it had been shown that the case was one of interstate commerce instead of intrastate commerce.

The case came up for trial in the Court of Oyer and Terminer before Judge Audenried in Philadelphia on Thursday, May 1st, and was argued by Assistant State Attorney Maurer for the Commonwealth of Pennsylvania, representing the Pennsylvania State Pharmacy Examining Board and by Messrs. Chas. Biddle and Henry LaBarre Jayne, of the firm of Biddle, Paul & Jayne, of Philadelphia, for Sharp & Dohme. The witnesses for the Board were Messrs. Rohrman, of the Philadelphia Drug Exchange; Christopher Koch, Vice-President of the Pennsylvania Examining Board; Professor C. H. LaWall, of the Philadelphia College of Pharmacy; L. L. Walton, Secretary of the Board, and H. C. Blair, of Philadelphia. The witnesses for Sharp & Dohme were Dr. A. R. L. Dohme, President of that corporation, and Dr. Herman Engelhardt, their chief chemist.

After the bottle of Essence of Pepsin had been brought into the case and Prof. LaWall had testified as to what was the U. S. P.

and the N. F., and that he had found that the Essence of Pepsin had shown on digestive test by the U. S. P. method for testing pepsin products, that it was not below its claimed and labelled strength of 1 : 2000, but considerably above it, and was, therefore, correctly labelled and not misbranded, the claim was made by the Assistant District Attorney that it was misbranded, because according to the regulations of the Board no Essence of Pepsin could be sold in Pennsylvania that was labelled Essence of Pepsin unless it was of the N. F. strength of 1 : 3800, *i.e.,* one part would digest 3800 parts of coagulated egg albumen according to the U. S. P. test. Thereupon Mr. Biddle objected and gave as his reason for so doing that regulations were not laws, and at once Judge Audenried interposed and said, If your case rests upon the effectiveness of regulations drawn by your Board, then I wish to state most emphatically that the legislature of the Commonwealth of Pennsylvania never intended that such a body of men as constitute this Board or any Board, *should have the power to read regulations framed by them into the organic law of this state.* When Mr. Maurer admitted that that was the crux of the whole case, the Judge then ordered the Jury to bring in a verdict of not guilty and dismissed the case.

This decision, hence, establishes for the drug trade the important fact that regulations drawn by executive boards appointed to execute Pure Food and Drug Laws have not the effect of law, and in so far as they affect or modify the law in any way are null and void. The Sharp & Dohme Essence of Pepsin case, hence, promises to be a crucial and important one for many existing conditions and cases pending based upon the regulations of executive boards held out to have the force of law.

Very truly yours,

BALTIMORE, MD., May 2, 1913.

A. R. L. DOHME.

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## OBITUARIES.

### OSCAR OLDBERG.

Dr. Oldberg, Dean Emeritus of the Northwestern University School of Pharmacy, died, at Pasadena, California, on February 27, 1913, as the ultimate result of a stroke of paralysis suffered several years ago. He was born in Alftla, Sweden, on January 22, 1846, and educated in the Swedish Gymnasium at Gefle, and later studied

at Upsala. Prof. Oldberg came to America in 1864. For nearly fifty years he was engaged in various phases of pharmaceutical work as a teacher, an author and an editor, and he succeeded in leaving a permanent influence for good upon the professional development of pharmacy.

As a teacher and as Dean of the School of Pharmacy of Northwestern University, Professor Oldberg will be remembered by his many students for the lucidity with which he imparted his knowledge and for his sympathetic comprehension of their viewpoint. He taught as one realizing that as a teacher he was helping to shape the future development of pharmacy through the lives of students who were to become the future pharmacists of America.

In his work as an author and editor and as a contributor to the Proceedings of the American Pharmaceutical Association, and the Pharmaceutical journals, he applied himself with diligence and singleness of purpose that will cause future generations to regard him as a prophet and as one of the peerless leaders in pharmaceutical education.

His intellectual integrity coupled with his sense of humor made him a delightful companion, and one's associations with him are to be compared with rambles in nature where there are no discords but a harmonious blending of all the forces of nature and all the varied forms of life. As a man and as a friend all who knew him will grieve that he is gone and rejoice that he has lived.

Upon coming to the United States Professor Oldberg very soon entered upon positions of responsibility and trust. In 1872 we found him located in Memphis, Tenn., and acting as Vice-Consul of Sweden and Norway. Shortly after this he became Chief Clerk and Medical Purveyor in the United States Marine Hospital Service at Washington. During this time he also was made a member of the faculty of the National College of Pharmacy. By reason of his knowledge and ability he was elected a member of the Committee of Revision of the U. S. Pharmacopœia in 1880 and was re-elected in 1890 and 1900. In 1908 the American Pharmaceutical Association elected him to the Presidency of that body. Outside of membership in the American Pharmaceutical Association and the Illinois State Pharmaceutical Association Professor Oldberg was enrolled as a member of relatively few Societies. He was elected an honorary member of a number of pharmaceutical bodies, and became honorary member of the Philadelphia College of Pharmacy in 1911. Dr. Oldberg also was Secretary of the Seventh International Pharmaceutical Congress in 1893.

Professor Oldberg's most important work was in the organization of the Illinois College of Pharmacy in 1880 and which later became a part of Northwestern University. He was the leading spirit in this school from the beginning and continued active in its work until his health was undermined in 1911. He was not only Professor and Dean, but he was virtually the presiding executive officer and registrar. All matters pertaining to the School were under his supervision and he saw to it that every phase of the work was done economically and efficiently.

Dr. Oldberg wrote a number of valuable works appertaining to pharmacy, among which the following may be mentioned:

"Companion to the U. S. Pharmacopœia." (1884.)

"Weights and Measures." (1885.)

"Home Study in Pharmacy." (1890.)

"Fifteen Hundred Prescriptions and Formulæ." (1892.)

"Inorganic Chemistry." (1900). "Pharmacy." (1913).

"Pharmaceutical Problems and Exercises." (Fourth Ed., 1907).

Dr. Oldberg was a constant contributor to the Pharmaceutical magazines. As editor of the *Bulletin of Pharmacy* for three years, he left an impression for good upon the subsequent development of this Journal. We reproduce herewith an appreciation by the Editor of the *Bulletin of Pharmacy* (p. 105):

"In the death of Oscar Oldberg there has passed away another one of the small group of five or six real leaders of thought and progress so far produced in the history of American Pharmacy.

"For considerably more than a quarter of a century Professor Oldberg played a unique and important role in pharmacy. He was a sort of philosopher on the mountain top—a seer who had a calm, detached, broad view of the scene below him on all sides, who observed and studied and pondered over the shifting panorama, who realized what was missing here and there to complete the picture, who more than once saw danger looming up and gave warning of its approach, and who with something of the Old Testament prophet in him pierced the future, foretold what would happen, and sought with forceful voice and eloquent pen to have wise and abundant preparation made for the inevitable.

"Ideas often outlive the men who conceive and give them utterance. If they are born of truth and rooted in human need, they go on developing in strength and force, and they are finally accepted by a public which has lost sight of their origin. It is yet far too early to measure the full results of Professor Oldberg's work as a leader, but already many of the reforms first agitated by him, and since taken up by others, are gradually being realized.

"For years he declared with great force and vigor that the boards

of pharmacy themselves had the power and authority to raise educational standards if only they would exercise it, and now we find many of them insisting upon a certain measure of preliminary education, denying "experience" credit to the colleges which do not live up to prescribed standards, and establishing requirements of one kind and another. He always insisted, too, that the laws must provide for "assistant pharmacists" as well as fully registered pharmacists; that the requirements for one class must be much less severe than for the other; that the number of clerks would thus be incidentally increased while the number of stores would be decreased —and we find now that this idea has been quite generally accepted and that it is gaining force year by year. Back in 1906, and even before that, he declared that the boards and the colleges were all traveling their own paths; that the condition was one of confusion worse confounded; that agreement should be reached on a syllabus of subjects to which they could all conform—and now we have the syllabus movement well established, growing in favor, and promising much for the educational future of the calling.

"We do not propose on this occasion to take up in detail the numerous educational, registrational, and legislative reforms which Professor Oldberg urged with singular logic, power, and patience for so many years. In epitome some of them may be found in the 13 principles prepared for discussion at the Indianapolis meeting of the A. Ph. A. in 1906, and it is our conviction that these principles, and the Professor's address that year as chairman of the Section on Education and Legislation, were models of clear thinking, constructive planning, and convincing English. Already Professor Oldberg as a prophet is not without much honor in his own country, but we venture the opinion that he will come into his own more and more as the years go by.

"And what a fine, lofty character this is to which we are giving honor and shall continue to give honor! Never was there the slightest stain on it. Never the least deviation from the path of quiet, simple honesty and dignity. Hundreds of his students, scattered over this and other countries, felt an affection for him amounting to reverence. Thousands of others, comprising all who knew him, or who had read his printed messages, or had been inspired by his high and lofty ideals, will cherish a great and lasting respect for his memory.

"For he was a Man no less than a Leader."

On May 19, 1873, Dr. Oldberg was married to Emma Parritt, Youngstown, Ohio, who survives him and is now residing at Pasadena, California. In his marriage Prof. Oldberg was very fortunate for Mrs. Oldberg was not only a woman of culture but was always ready to coöperate in her husband's plans and assist in making his work successful. They had three children all of whom are living. The older son, Arne Oldberg, is Professor and Dean of Northwestern University School of Music. The younger son, Virgil O. Oldberg, is living in Detroit, Michigan. The only daughter, Mrs. Olga Smallwood, resides in Chicago. H. K.

## Alexander H. Jones.

Alexander H. Jones, for many years connected with the firm of Powers and Weightman and an authority upon tariff questions, died on December 23, 1912, at his home in Germantown, aged 76 years.

Mr. Jones received his early education in the public schools of Philadelphia, and graduated from the Central High School when but sixteen years of age.

In August, 1852, he entered the employ of Powers and Weightman, where he remained until March, 1902, when, owing to a paralytic stroke, which incapacitated him from further business, he retired. While in the employ of this firm, he was steadily advanced and finally became the firm's representative in many important matters, especially in those of tariff legislation affecting the chemical industry.

Mr. Jones made a close study of the tariff, particularly that portion that pertained to the chemical industry, and was intimately associated in his tariff-work with such men as the late Senator Allison, Ex-Senator Aldrich; also, the late Wm. D. Kelley, and Samuel J. Randall, Congressman Dalzell, and many other prominent protectionists. His opinion was often asked by congressional committees, when tariff matters were under consideration, and the information he furnished was always comprehensive and dependable.

It was by reason of his intimate knowledge of the tariff and legislative matters that he was elected as Chairman of the Committee on Legislation of the N. W. D. A., some years ago, in which position he did much good service for the trade in general.

His widow and one son survive him. J. W. E.

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## Charles Shreve Braddock.

Charles Shreve Braddock was born in Medford, Burlington County, New Jersey, May 22nd 1828, and was of Quaker parentage.

His parents were William Rodgers Braddock and Sarah Shreve, who were descended from the first settlers of that name in the county in 1702, and on the mother's side from the Holland family of Shreve who came from New Amsterdam to New Jersey.

He received his education in private and public schools, early being proficient in Latin and higher mathematics. While a young man he helped his father survey South Jersey, and saw the pos-

sibility of growing cranberries, which he put to practice in 1849, by bringing the vines from Cape Cod, thus being the first to plant cranberries in New Jersey. He graduated from the College of Pharmacy, in Philadelphia, in 1851, and at the time of his death, December 1st, 1912, was the oldest member of his class.

He spent a year as prescription clerk to the Apothecary of Jefferson College, forming life long friendship with such men as Dr. Da Costa and others of that period. He was employed in a New York Pharmacy (corner Broadway and Park Row, where the St. Paul Building now stands) for over a year, and started the first drug store in Haddonfield, New Jersey, in 1853. In 1857 he married Ann Zane Collings, of Collingswood, New Jersey, and five children survive him.

## PHILADELPHIA COLLEGE OF PHARMACY.

### NINETY-SECOND ANNUAL COMMENCEMENT.

The exercises connected with the ninety-second annual commencement of the Philadelphia College of Pharmacy were held in the American Academy of Music on Thursday evening, May 22nd. The prayer was made by the Rev. Edwin S. Carson, after which the degrees were conferred by President Howard B. French.

The title of Master in Pharmacy (Ph. M.)—*honoris causa*—was conferred upon each of the following: Samuel Philip Sadtler, Ph. D., LL.D.; Henry Kraemer, Ph.G., Ph.B., Ph.D.; James Hartley Beal, Sc.D., Pharm. D.; Frederick Belding Power, Ph.G., Ph.D., LL.D.; and Joseph Winters England, Ph.G.

The following are the names of those receiving the degree of Doctor in Pharmacy (P.D.) together with the subjects of their graduating theses:

| Name | Thesis | |
|---|---|---|
| Albeck, Ray Augustus | Kieselguhr | Pennsylvania |
| Arnold, Guy Raymond | Pigments | Pennsylvania |
| Austin, Jacob | Hydrargyrum and the Halogens | Pennsylvania |
| Bailey, Albert Henry Anthony | Extract of Cascara Sagrada | New Jersey |
| Beach, Malcolm | Extemporaneous Ointments | New York |
| Beaver, Joseph Andrew | Combretom Sundiacum | Pennsylvania |
| Blasingame, Walter Alvin | Calcium Hypophosphite | Georgia |

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|---|---|---|
| Bost, William Dale, [P. C.] | Liquor Plumbi Subacetatis | North Carolina |
| Brisgol, William Phillip | Basic Aromatic Elixirs | Pennsylvania |
| Brown, Charles Henry | Elixir of the Phosphates of Iron, Quinine and Strychnine | Pennsylvania |
| Brown, West Smith | Alcohol—Source and Cost of Manufacture | Pennsylvania |
| Buckalew, Raymond Gager | Calx Chlorinata | Pennsylvania |
| Burke, Walter Peter | The Manufacture of Wine | New Jersey |
| Campbell, Frank William | Flaxseed and its Products | Virginia |
| Case, Joe Stinchfield | Acidum Hydrochloricum Dilutum | Ohio |
| Clark, Edgar George | Nux Vomica | Pennsylvania |
| Comber, Miss M. Beatrice | Sodium Phosphate | Pennsylvania |
| Crouse, Albert Roy | Mistura Ferri Salicylatis | W. Virginia |
| Cutter, Paul Styer | Manufacture of Prescription Bottles | New Jersey |
| Dunkle, Robert Pattison | Carmine | Pennsylvania |
| Dunkleberger, Eugene Blair | Narcotics | Pennsylvania |
| Eakle, Roy Sperow | Perfumery | Maryland |
| Eberly, Russell Neely | Liquor Calcis | Pennsylvania |
| Engstrom, Myrtle Emmett | The Recovery of Phosphoric Acid in the Manufacture of Hydrogen Peroxide | Pennsylvania |
| Fairlamb, William Hamer | Tinctura Vanillae | Pennsylvania |
| Fitzgerald, Charles Edward | Sapo Mollis | Pennsylvania |
| Ford, Harry Billings | The Manufacture of Effervescent Salt | Connecticut |
| Foltz, Alvin Elmer | Ferrum | Pennsylvania |
| Foster, Sylvan Lorraine | Manufacture of Paper | Delaware |
| Fox, Joseph Patrick | Nitro-Glycerin and its use in Coal Mining | Pennsylvania |
| Frank, Harvey | Color Standards for Liquids | Pennsylvania |
| Gilbert, Cyrus Thurston | Liquor Plumbi Subacetatis Dilutus | Connecticut |
| Gray, Harry Herman | Milk of Magnesia | Ohio |
| Gruber, Abraham | Hydrastis Canadensis | Pennsylvania |
| Guyn, Marion Eugene | Spiritus Ammoniae Aromaticus | Kentucky |
| Haney, Edward Richard | Potassium Bitartrate | North Carolina |
| Harnly, Miles Vern | Potassium Ferrocyanide | California |
| Hartenstein, Earl Stewart, [P. C.] | Liquor Ferri Chloridi | Illinois |
| Heaton, Harold Johnson | A comparison of Menstrua in the Extraction of Cudbear | Pennsylvania |
| Heberlig, Wilmer Martin | Repercolation of Fluidextract of Aconite | Pennsylvania |
| Henry, Ralph A., [Ph.G.] | Manufacture of Paper | Pennsylvania |
| Hill, Frank Mallory | Extraction of Turpentine from Pine Wood | Michigan |

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|---|---|---|
| Homerberg, Victor Oliver | Sanguinaria Canadensis | Minnesota |
| Hutchison, George Barkley | Solution of Hydrogen Dioxide | Kentucky |
| Irwin, Samuel Maxwell | The Manufacture of Tooth Paste by the Pharmacist | Pennsylvania |
| Kern, Alvin Henry | Slate | Pennsylvania |
| Klebanoff, David | Filling Capsules | Russia |
| LaRue, Raymond Howell | Asafetida | New York |
| Lehrman, Isador | Digitalis | Pennsylvania |
| Levi, Gustav Byron | Cataplasma Kaolini | Pennsylvania |
| McCarty, Harland Adair | Dentifrices | Pennsylvania |
| Marth, Alfred Robert Franklin | Pancreatinum | Wisconsin |
| Messimer, Guy William | Anisum | Pennsylvania |
| Michael, Robert White | Cod Liver Oil | Pennsylvania |
| Moon, John Arthur | Tablet Triturates and Compressed Tablets | Pennsylvania |
| Moyer, William Vance | Sulphurated Potassa | Pennsylvania |
| Mullen, Edward Andrew | Syrupus Hypophositum Compositus | Pennsylvania |
| Nisley, Lee Armstrong | Dental Wash | Pennsylvania |
| Nitschke, August Harry | Glycyrrhiza and Glycyrrhizin | Oregon |
| Osborne, James Edmund | Veratrum Viride | Canada |
| Peberdy, Grafton Marvin | Extract of Belladonna | Connecticut |
| Perlman, Henry | Soya Beans | Pennsylvania |
| Peters, Warren Lucien | Pharmaceutical Sterilization | Pennsylvania |
| Plunkett, Frederick James | Nitric Acid and Diluted Nitric Acid | N. Hampshire |
| Rea, Scott Coyle | Tooth Pastes | Pennsylvania |
| Reichard, William Edward | Liquid Soaps | Pennsylvania |
| Reinish, Henry Isadore | Ampoules, their Preparation and Uses | Pennsylvania |
| Ricketts, John Gregory | Liquor Magnesii Citratis | Pennsylvania |
| Rohn, Miss Herma Alice | Calcii Carbonas | Pennsylvania |
| Rosenberger, Joseph Mervin | Compound Syrup of the Hypophosphites | Pennsylvania |
| Ruth, Elton Sunday | Boric Acid Solutions | Pennsylvania |
| Ruth, Robert Jacob | The Masking of Emulsions | Ohio |
| Rutter, Lee Deitrich | Gelsemium | Pennsylvania |
| Samet, Gustav | Courier Oil | Pennsylvania |
| Sandt, Clarence Lerch | Quinone | Pennsylvania |
| Seif, Louis Edward | Alum | Wisconsin |
| Shade, George Washington | Sodium Nitrate | Pennsylvania |
| Shales, Marvin Asa | Strophanthus | Pennsylvania |
| Slocum, Fred Williams | Artificial Silk | New Jersey |
| Smith, Arthur Joseph | Cotton Seed, Products and uses | Pennsylvania |
| Smith, Fred Merrels | Potassium Bicarbonate | New York |
| Smith, Stanley Warren | Liquor Potasii Hydroxidi | Pennsylvania |

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|---|---|---|
| Snyder, Erwin Cleveland | Adulteration of Catechu with Mangrove Extract | Pennsylvania |
| Southall, James Morton | Elixir of the Phosphates of Iron, Quinine and Strychnine | Alabama |
| Stevens, Gerald Henry | Embalming Fluids | Pennsylvania |
| Sutcliffe, John Lewis | Graphite and its uses | Pennsylvania |
| Taylor, Roy Horton | Tincture of Strophanthus | Pennsylvania |
| Toplis, William Samuel | Gelatin Capsules for Enteric Use | Pennsylvania |
| Vogel, John Michael | Cotton Seed | Pennsylvania |
| Wack, Norman Aloysius | Enteric Capsules | Pennsylvania |
| Walters, Charles Ellsworth | Liquor Ferri et Ammonii Acetatis | Pennsylvania |
| Whipple, Ernest Herbert | Bismuth Beta-Napthol | Ohio |
| Weinberg, David Hanan | Physiological Standardization of Digitalis by means of Frogs | Pennsylvania |
| West, Hans Peter | Starch | W. Virginia |
| Witkowski, Leon Francis | Bacterins | Pennsylvania |
| Wolf, Lawrence Keenportz | Emulsion of Silver Iodide | Pennsylvania |
| Worley, George Rufus | The Quantitative Estimation of Acidum Phosphoricum U. S. P. | Ohio |
| Zonies, Nathan | Iodine | Pennsylvania |

The following are the names of those graduates who received the degree of Pharmaceutical Chemist (P.C.) together with the subjects of their theses:

| Name | Thesis | |
|---|---|---|
| Baumgartner, Harry Francis | Syrupus Limonis | Pennsylvania |
| Blake, William Caleb | The Manufacture of Steel | New Jersey |
| Buck, William Robert | Oleum Gossypii Seminis | Arkansas |
| Burwell, Alphonzo Colfax | Emulsions | District of Columbia |
| Comber, Miss Gertrude Agnes | Magnesium Oxide | Pennsylvania |
| Clark, Roy Lavender | Antityphoid Vaccination | Utah |
| Elward, Joseph Francis | Extemporaneous Emulsions | Pennsylvania |
| Eshenbaugh, Roscoe Russell | The Chemical Characteristics of Linseed Oil | Pennsylvania |
| Fackenthall, Philip Frederic | Digitalis Seedlings | New Jersey |
| Fong, Job | Ginseng | China |
| Goodfriend, Harry Politzer | Silicate of Soda and its Solution | Pennsylvania |
| Holloway, John Wilson | Greaseless Vanishing Creams | Pennsylvania |
| Ireland, Oscar Collins | Sugar and its Manufacture | New Jersey |

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|---|---|---|
| Keller, Frederick Eugene | Liquid Petroleum from Gas | W. Virginia |
| Keppler, John Fred | Rattlesnake Venom | Pennsylvania |
| Kinback, Edwin Homer | Glass Graduates | Pennsylvania |
| McKean, Harold Andrew | The Salt Industry in New York State | New York |
| Morris, George Thorn | Acetanilidum | Pennsylvania |
| Russell, Miss Lillian | Magnesii Carbonas | Pennsylvania |
| White, Charles Albert | Bee Culture and its Products used in Pharmacy | New Jersey |

Certificates of Proficiency in Chemistry were awarded the following:

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|---|---|
| Forman, LeRoy | New Jersey |
| Jeliff, Glenn E. | Pennsylvania |
| Moerk, Frank Nicolai | Pennsylvania |

The following received certificates of Proficiency in the Food and Drug Course:

| | |
|---|---|
| Foss, George Rodney | Mississippi |
| Grantham, Richard I | North Carolina |

The address to the graduating class was made by Hon. William E. Humphrey of Washington.

### Award of Prizes.

The Martin Cup, awarded to the graduation class obtaining a higher average than the one immediately preceding it, was awarded to the class of 1912 and accepted on behalf of the class by their President, Joseph F. Elward, the presentation being made by Dr. R. V. Mattison. The grade of distinguished was obtained by Victor O. Homerberg. The following students attained the grade of meritorious: Ray A. Albeck, Charles H. Brown and John M. Vogel.

The Procter Prize, a gold medal and certificate, for the highest general average of the Class with a meritorious thesis, was awarded to Victor O. Homerberg, the presentation being made by President French.

The William B. Webb Memorial Prize, a gold medal and certificate, offered for the highest general average in the branches of Committee, Operative Pharmacy and Specimens, was awarded to Victor O. Homerberg, the presentation being made by President French. The following graduates received honorable mention in connection therewith: Harry F. Baumgartner, Charles H. Brown, and William V. Moyer.

The Chemistry Prize, $25, offered by Prof. Samuel P. Sadtler, for knowledge of Quantitative Chemical Analysis, was awarded to Victor O. Homerberg.

The Materia Medica Prize, $25, offered by Prof. Clement B. Lowe, for the best examinations in Materia Medica and in recognition of Materia Medica Specimens with a meritorious thesis, was awarded to Victor O. Homerberg. The following graduates received honorable mention in connection therewith: Ray A. Albeck, Walter A. Blasingame, Charles H. Brown, Joseph P. Fox, Harvey Frank, Cyrus T. Gilbert, Miles V. Harnly, Guy W. Messimer, Henry Perlman, James M. Southall, John M. Vogel, and Nathan Zonies.

The Microscopic Research Prize, a compound microscope, offered by Prof. Henry Kraemer, for the most meritorious thesis involving original Microscopic work, was awarded to Victor O. Homerberg. The following graduates received honorable mention in connection therewith: Philip F. Fackenthall, Guy W. Messimer and Erwin C. Snyder.

The Analytical Chemistry Prize, $25, offered by Prof. Frank X. Moerk, for the best work in qualitative and quantitative analysis, was awarded to Victor O. Homerberg. The following graduates received honorable mention in connection therewith: Harry F. Brown, Sylvan L. Foster, Harvey Frank, Arthur J. Smith, Erwin C. Snyder, and John M. Vogel.

The Operative Pharmacy Prize, $20 in gold, offered by Prof. Joseph P. Remington, for the best examination in Operative Pharmacy, was awarded to Roy H. Taylor. The following graduates received honorable mention in connection therewith: Harry F. Baumgartner, Charles H. Brown, Robert P. Dunkle, Russell N. Eberly, Job Fong, Harvey Frank, John M. Vogel and Norman A. Wack.

The Maisch Botany Prize, $20 in gold, offered by Mr. Joseph Jacobs, of Atlanta, Ga., for the best Herbarium Collection of Plants, was awarded to Philip F. Fackenthall. The following graduate received honorable mention in connection therewith: Harry H. Gray.

The Mahlon N. Kline Theoretical Pharmacy Prize, a Troemner Agate Prescription Balance, for the best examination in theory and practice of Pharmacy was awarded to James M. Southall. The following graduates received honorable mention in connection there-

with: Ray A. Albeck, West S. Brown, Joseph P. Fox, Harvey Frank, Cyrus T. Gilbert, Victor O. Homerberg and Henry Perlman. The presentation being made by Joseph W. England.

The Commercial Training Prize, $20 in gold, offered by Prof. Joseph P. Remington to the graduate who passed the best examination in Commercial Training at the final examination for the degree, was awarded to Nathan Zonies. The following graduates received honorable mention in connection therewith: Gertrude A. Comber, Philip F. Fackenthall, Harvey Frank, Harold J. Heaton, Samuel M. Irwin, William V. Moyer, August H. Nitschke and Norman A. Wack. The presentation being made by E. Fullerton Cook.

The Instructors' Prize, $20, offered by the Instructors of the College, for the highest term average in the branches of Pharmacy, Chemistry and Materia Medica, was awarded to Cyrus T. Gilbert. The following graduates received honorable mention in connection therewith: Ray A. Albeck, William R. Buck, Frank M. Hill, Guy W. Messimer, John G. Ricketts and Erwin C. Snyder. The presentation being made by Dr. Alfred Heineberg.

The Pharmacy Quiz Prize, one year's membership in the American Pharmaceutical Association, offered by Prof. Charles H. LaWall, for the best term work in Theory and Practice of Pharmacy, was awarded to Cyrus T. Gilbert. The following graduate received honorable mention in connection therewith: Ray A. Albeck.

The Special Lecture Report Prize, $10 in gold, awarded for the best written reports of the series of special lectures held under the auspices of the College, session 1912–1913, was awarded to James M. Southall. The following graduates received honorable mention in conection therewith: Ray A. Albeck, Russell N. Eberly, Cyrus T. Gilbert, Harold J. Heaton, George B. Hutchison, August H. Nitschke and Henry Perlman. The presentation being made by Prof. Chas. H. LaWall.

The Kappa Psi Fraternity Prize, a gold medal, offered by the Eta Chapter of the Kappa Psi Fraternity to the graduate making the highest general average during his or her senior year at the College, was awarded to Victor O. Homerberg. The following graduates received honorable mention in connection therewith: Ray A. Albeck, Charles H. Brown, Philip F. Fackenthall, John G. Ricketts, Erwin C. Snyder and John M. Vogel. The presentation being made by Mr. George Holstein.

The Wellcome Cup awarded to the second year class receiving

a higher general average than the class to whom it has been previously awarded was presented on this occasion to the class 1913–1914 and accepted on behalf of the class by Henry B. Decker, the presentation being made by Mr. Walter A. Rumsey.

## PHARMACEUTICAL MEETING.

The regular Pharmaceutical Meeting was held on Tuesday, May 20th at 3 o'clock and was taken up by a number of members of the graduating class who presented summaries of their thesis work. Abstracts of these theses will be published in a later issue of this JOURNAL. The following are names of those participating in this symposium: J. F. Elward, P. F. Fackenthall, Harvey Frank, C. T. Gilbert, H. J. Heaton, V. O. Homerberg, S. M. Irwin, J. F. Keppler and S. C. Rea.

James Hugh Allan, of Baltimore, presided. Dr. George B. Weidemann was re-elected Recorder for the meetings for 1913–1914.

GEORGE B. WEIDEMANN,
*Recorder.*

## CURRENT LITERATURE.

### A COUNCIL ON PATENT MEDICINES.

The better class of drug journals, in common with the better class of the pharmacists themselves, have long recognized the anomalous position in which the modern druggist stands. On the one hand, the druggist urges physicians to return to rational prescribing and to eschew proprietary products; on the other hand, the druggist himself stands before the medical profession as a dispenser of "patent medicines"—proprietary remedies of the most unscientific and frequently fraudulent type. In commenting on this unfortunate state of affairs, the *Journal of the American Pharmaceutical Association* in its April issue says that the druggist's position has been pressed on him by force of circumstances "in which patent medicines represent his business necessities while the propaganda for rational prescribing represents his aspirations for better things and his strivings for a more professional, as well as a more profitable business." Recognizing that something must be done if pharmacists wish to retain the confidence both of the

physician and of the public, and to keep their professional standing, the *Journal* recommends that the American Pharmaceutical Association appoint a council that shall stand in the same relation to "patent medicines" that the Council on Pharmacy and Chemistry of the American Medical Association stands in relation to proprietary medicines. As the drug journal puts it, the work of the council whose creation it suggests should be "to determine first of all whether there is or can be such a thing as a legitimate proprietary medicine ['patent medicine'] which a druggist can conscientiously recommend and sell to the general public, and whether on the whole the public is benefited or injured by the use of such ready-made medicines." If the council decides that there are "patent medicines" which the druggist may recommend and whose sale will benefit the public, its next work would be "to determine whether it is possible to draw a distinct line of demarcation between legitimate and illegitimate remedies. . . ." The growing distrust in the whole "patent medicine" business is such that it behooves our sister profession to rid itself of the stigma which the sale of worthless, and in many cases dangerous, preparations is bringing on an honorable profession. A council such as the editor of the *Journal of the American Pharmaceutical Association* recommends might do much toward this end. If it is brought into existence and does its work thoroughly and honestly, we can with a certain degree of accuracy prophesy what will happen: Some of the most vicious "patent medicines" will be driven off the market. Others less vicious but worthless will have their sales greatly curtailed. As a corollary of this, the American Pharmaceutical Association may expect organized opposition in the form, possibly, of a League for Pharmaceutical Freedom. The *Journal of the American Pharmaceutical Association* will be vilified by many, if not most, of the privately owned drug journals. And last, but not least, the editor of the *Journal* will become the center of an attack in which all the resources of blackguardism and billingsgate will be brought to bear in an attempt to besmirch and blacken his reputation. But the fight will be well worth while.—Reprinted from *Jour. A. Med. Assn.*, May 19, 1913, pp. 1546–1547.

### HAARLEM OIL.

A misapprehension in respect to the nature and composition of this ancient proprietary appears to have been prevalent in the trade. The fact that Haarlem oil is essentially a sulphurated lin-

seed oil with turpentine oil, while fully recognized abroad, is disputed here. Three prominent brands, typical, if not of Haarlem oil, then of what is offered for sale in this country as Haarlem oil, have been examined. The importers of each of the three brands stoutly maintain that their article is the only original Haarlem oil and adduce documentary evidence which apparently supports their claims. The prototype is probably lost in antiquity. All that is certain now is that the oil all comes from Holland. It is not even all made in Haarlem, its reputed birthplace. Amsterdam does a thriving business in its manufacture and exportation. The extraordinary literature formerly wrapped around the familiar skin-capped vial has been interdicted by the authorities. Withal, the remedy is certainly the oldest and probably the most widely employed of all "patent" medicines in the world. It is surprising how often one meets a layman who professes the utmost faith in the curative properties of the oil.

Under the general title "Oleum Terebinthinæ sulfuratum" Hager[1] gives the following synonyms of this ancient remedy: "Balsamum sulfuris terebinthinatum; Balsamum Sulfuris Rulandi; Oleum Harlemense; Geschwefeltes Terpentinöl; Schwefelbalsam; Harlemer Balsam; Silberbalsam; Silbertropfen; Balsamsilbertropfen; Tillytropfen; Dutch trops [drops?]." To the remedy itself, which has appeared in the market under each of the above designations, the author assigns the formula:

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|---|---|
| Sulphurated linseed oil | 1 part. |
| Oil of turpentine | 3 parts. |

According to the same author,[2] sulphurated linseed oil is prepared by dissolving, with the aid of heat, 100 parts of sulphur in 600 parts of linseed oil. Dieterich[3] confirms the above facts. Buchheister[4] states that "Oleum Terebinthinæ sulfuratum, Harlemer Balsam, H. Oel" is prepared by dissolving, with the aid of heat, 1 part of sulphur in 6 parts of linseed oil, subsequently adding 7 parts linseed oil and 21 parts of turpentine oil. Merck,[5] under the title and subtitles, "Oleum Terebinthinæ sulfuratum, Balsamum

[1] Handbuch der Pharmaceutischen Praxis. 1907, ii, p. 1023.
[2] *Ibidem*, p. 297.
[3] Pharmaceutisches Manual, 1904, pp. 313, 316.
[4] Vorschriftenbuch für Drogisten, 1891, p. 15.
[5] Index, 1902, p. 188.

sulfuris terebinthinatum, Balsamum sulfuris Rulandii," states that the preparation is a solution of sulphurated linseed oil in oil of turpentine and that it is also dispensed as "Harlemeröl." Hence, the foremost authorities on pharmaceutical practice define Haarlem oil as a solution of sulphurated linseed oil in oil of turpentine. It is true that Hager[6] declares that "Harlemer Balsam" was originally [ursprünglich] made by the dry distillation of 50 parts aloë, 50 parts myrrh, 20 parts olibanum, and 500 parts olive oil. The product was also called "Oleum empyreumaticum Batavicum." But this method of preparation was abandoned long ago, presumably on account of the cost of materials. Certainly the cheapness of Haarlem oil as it now appears in the market is *prima facie* evidence that it is not manufactured by any formula such as that cited above.

Now let us consider the physical and chemical properties, as shown by a careful examination in this laboratory, of the three brands mentioned above and referred to as samples A, B, and C.

1. Physical Appearance. A. A viscid liquid of a red-brown color. Odor terebinthinate and somewhat fetid. B. A thin liquid of a dark red-brown color. Odor composite, terebinthinate and amber-like. C. A slightly viscid liquid of a red-brown color. Odor terebinthinate, much finer and sweeter than the other two and reminding of turpentine from *Pinus sylvestris*. Odor of amber oil, subsequently shown to be present, disguised.

2. Specific gravity. Determined in a 50 c.c. pycnometer at 25°. A. 0.9234. B. 0.9082. C. 1.0039.

3. Properties of the portion volatile in steam. 50 c.c. of each sample were distilled with steam, a little NaOH being added to the still to hold back resins, sulphur, etc. A. A nearly colorless oil was obtained. One rectification produced a colorless oil, the properties of which are given below. B. A dark-colored, strongly odorous oil was obtained which had to be thrice rectified before a satisfactory product was obtained. C. Results exactly similar to those obtained with B.

(*a*) Physical appearance. A. A colorless oil, having the true odor of oil of turpentine. B. A light yellow oil, odor terebinthinate, unmistakably empyreumatic and characteristic of amber oil. C. A yellow oil, odor terebinthinate, unmistakably empyreumatic and highly characteristic of amber oil.

[6] Handbuch der Pharmaceutischen Praxis, 1907, II, p. 502.

(*b*) Specific gravity. Determined in a Sprengel tube at 25°. A. 0.8648. B. 0.8625. C. 0.8749.

(*c*) Optical rotation. A. + 10° 49′. B. — 8° 36′. C. — 6° 31′.

(*d*) Solubility. A and B formed clear solutions with 2 to 10 vols. 95 per cent. alcohol. C formed a clear solution with 1 to 10 vols. 95 per cent. alcohol.

(*e*) Petroleum. Hydrocarbons of the paraffin series were proved absent by the fuming nitric acid test [7] in each of the oils.

(*f*) Turpentine. The presence of turpentine in all three oils was demonstrated by the preparation of pinene nitrosochloride.

4. Petroleum in the original oil. Samples A and C were tested for petroleum products by the fuming nitric acid test.[8] Sample A. The burette method was tried twice, but the reaction could not be completed owing to the dense froth produced which persisted in going out the top of the burette. The experiment was then done in a shallow porcelain dish, using 40 c.c. of fuming nitric acid and 10 c.c. of the oil. After the reaction was complete, the liquid was poured into a burette. Result: light red-brown, clear liquid, no oily separation at surface. Sample C. It proved to be practicable to handle this sample in a burette. Result: deep red-brown liquid, holding in suspension resinous particles, but no oily separation at surface. These experiments proved the absence of hydrocarbons of the paraffin series (petroleum, kerosene, etc.).

5. Presence of sulphur. A finely powdered, intimate admixture of anhydrous sodium carbonate, 40 gms., potassium nitrate, 80 gms., and pure, dry sodium chloride,[9] 240 gms., was prepared by prolonged trituration in a mortar. Half a cubic centimeter of the Haarlem oil was put into a 15 c.c. porcelain crucible, provided with a cover, 10 gms. of the above mixture of salts were added, the crucible was covered and heated at 120° over night. Then the temperature was raised gradually until the mass was in a state of quiet fusion. After cooling, the mass was extracted with boiling water, the solution filtered, the filtrate evaporated to dryness, the residue brought to complete dryness repeatedly in the presence of HCl in order to expel $HNO_3$, then dissolved in boiling water and again

[7] Annual Report of Lehn & Fink's Analytical Department for 1909, p. 26.

[8] *Ibid.*

[9] Table salt is never pure enough for analytical use. It usually contains a considerable percentage of $SO_4$.

filtered. To the hot filtrate barium chloride solution was added. Three separate experiments on each of the Haarlem oils under examination gave immediate, decided precipitates, which were insoluble in excess of HCl. Two blank experiments, carried out in exactly the same manner, except, of course, for the omission of the Haarlem oil, yielded no precipitates, thus demonstrating the purity of the reagents. The presence of sulphur is further evidenced by a fetid odor, more or less disguised, in all Haarlem oils.

6. Summary. The above data indicated that A consisted of sulphurated oil and oil of turpentine; that B and C consisted of sulphurated oil, oil of turpentine, and crude oil of amber, the last named being present in greater proportion in C than in B.—From Report of Lehn and Fink's Analytical Department, 1910–1912.

### ARTIFICIAL MENTHOL.

The extremely low prices at which certain parcels of menthol have been offered in Hamburg at first suggested adulteration; the melting point, 37°–38° C. and 36.5°–38°; also the optical rotation, *ad* — 42.10° and 46.38° indicating that the samples were "abnormal." Further examination failed, however, to reveal the presence of any foreign addition, and analysis showed that the content of alcohols of the formula $C_{10}H_{20}O$ was 100 per cent. It is considered, therefore, that the menthol in question contained the stereo-isomeric menthols such as can be obtained easily by the reduction of menthone or of pulegone. Except in the British Pharmacopœia, 1898, which expressly states that menthol should be derived by cooling the oil of *Mentha arvensis* and of *Mentha piperita* there is no statement in any pharmacopœia which will preclude chemically-prepared menthol from use in medicine. In fact, in the French Codex, 1908, it is definitely stated that menthol is "also produced by reducing with hydrogen the corresponding *a*-ketone occurring in Japanese peppermint oil." (The British Pharmacopœia gives the melting-point of menthol as 42° C. and not exceeding 43° C. The French Codex requires it to melt at 43° C.—E. Tedesko, *Apoth. Zeit.*, 1913, 28, 312.) T. W. ENGLAND.

### JAPAN PEPPERMINT.

We enlisted the services of our good friend, Mr. J. Perez Henrique, representing the firm of Muhlethaler & Co., who was paying a visit to Japan, to obtain for us a specimen of the pepper-

mint plant now being cultivated in Okayama in Japan, and which is stated to produce the best peppermint oil. The sample has now come to hand, and, although the foliage is somewhat broken and it is not easy of identification, yet we have every reason to believe that it is not the variety that has hitherto been sent from Japan, but that it is in all probability the Chinese form, *Mentha Canadensis,* var. *glabrata.* To this we shall refer subsequently, however, and in the meantime we are promised also specimens of the mint plant as cultivated in Hokkaido.

We are sanguine that the identification of these plants may show that the varieties now being cultivated are different to those which were formerly distilled, and that in this way one may account for the difference in the constitution of the essential oil. (See *Perfumery and Essential Oil Record,* February, 1913, pp. 32–33.)—*Perfumery and Essential Oil Record,* May, 1913, p. 118.

T. W. ENGLAND.

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## NOTES AND NEWS.

BRITISH MEDAL FOR AMERICAN RESEARCH WORKER.—The Hanbury medal of the Pharmaceutical Society has been awarded to Dr. Frederick Belding Power, Ph.D., LL.D. The medal is awarded biennially for excellence in the prosecution or promotion of original research in the chemistry and natural history of drugs, and the adjudicators are the presidents of the Linnean, Chemical, and Pharmaceutical Societies, and of the British Pharmaceutical Conference, together with one pharmaceutical chemist (who on the present occasion was Mr. Edmund White, vice-president of the Pharmaceutical Society), nominated by the last-named two presidents.

Dr. Power, who is a director of the Wellcome Research Laboratories, is an American by birth. He was a student at Strasburg University, where he received the degree of Doctor of Philosophy, and was assistant to the late Professor Flückiger. For the greater part of his career Dr. Power has been engaged in the investigation of drugs, and during the last seventeen years has written 150 scientific memoirs, embodying the results of his researches.—Extract from the *Times* dated May 20, 1913.